

who was contemporary with Apollonius, refers to a total eclipse of the sun which had *recently* occurred, and remarks of total solar eclipses in general that "a certain effulgence is seen round the circumference," so that although the sun may be wholly covered by the moon "still the eclipse is deficient in duration as well as in amplitude," this surrounding effulgence not allowing of a very intense shadow. These remarks of Philostratus and Plutarch Prof. Grant thinks may probably apply to the same eclipse, and afford "the earliest allusions to the corona recorded in history." Several attempts have been made to discover the date of the phenomenon, but so far as we know without success.

The earliest distinct and more accurate account of the corona is that given by MM. Plantade and Capiés, who observed at Montpellier on the occasion of the eclipse of May 12, 1706.

THE OUTER SATELLITE OF MARS.—Our ephemeris of the satellite of Mars is here continued ten days further from the elements employed last week, though much greater difficulty must now attend observations than when the discovery was first announced. In the middle of August the distance of the planet from the earth was less than 0.4; on November 12 it will have increased to 0.68. At the next opposition in 1879, the least distance of Mars will be 0.482, at a north declination of upwards of 18°, so that observations may be made at many observatories in this hemisphere, probably without greater difficulty than about the late opposition; at the following one in December, 1881, the planet will attain a declination of 27° N., but its distance from the earth will be at no time less than 0.602.

Prof. Asaph Hall's complete discussion of the observations of the satellites of Mars, made in the present year, will be looked for with much interest; it is only fitting that this investigation should be left in the hands of their discoverer, who has made the year 1877 a very notable epoch in the history of practical astronomy.

The following positions of the outer satellite are for 8h. G.M.T.

Nov. 3 ... Pos. 358 ... Dist. 21	Nov. 8 ... Pos. 27 ... Dist. 25
" 4 ... " 69 ... " 52	" 9 ... " 75 ... " 48
" 5 ... " 122 ... " 25	" 10 ... " 150 ... " 20
" 6 ... " 236 ... " 42	" 11 ... " 243 ... " 46
" 7 ... " 272 ... " 37	" 12 ... " 285 ... " 28

DE VICO'S COMET OF SHORT PERIOD.—The year to which we drew attention some time since (1876-9-1877-9) as one which might possibly witness the re-discovery of De Vico's comet of 1844 is drawing to a close without its having been remarked, and the chance of detecting it at this season if the perihelion passage be not already passed, is small. We must therefore probably place the comet in the class which, though undoubtedly moving in elliptical orbits of small dimensions when under observation, are now "lost." Whether in the case of De Vico's comet this arises from a larger error in the determination of the mean motion in 1844 than at present appears admissible, or whether the action of the planet Mars, to which allusion has been made in this column, may explain it, or again, whether the comet has encountered one of the minor planets, and thereby been deflected or disintegrated, cannot be at present ascertained. It was hardly to have been anticipated that the laborious investigations of Prof. Brünnow relating to the motion of this comet from 1844-55 would not have resulted in its re-observation.

METEOROLOGICAL NOTES

MEAN ATMOSPHERIC PRESSURE OF EUROPE.—A great contribution to this very important subject has been made by Dr. Buys Ballot in the second volume of the "Nederlandsch Meteorologisch Jaarboek voor 1872," which has just been published. The first 130 pages of

the volume are occupied with a very careful and in certain directions exhaustive discussion of the barometric observations made at about 110 places situated in different parts of Europe from 1774 to 1874. The method of discussion is identical with that adopted by Dr. Buys Ballot in his recently published paper on the Meteorology of Holland (NATURE, vol. xvi. p. 89). This method consists in accepting as the normal mean atmospheric pressure at Greenwich, Vienna, and Palermo, the arithmetic means of the observations made at these places which embrace periods of 100, 101, and 84 years respectively. The normal values for the other stations have been determined by the process of differentiation, that is, by a comparison of the means of all the observations made at the place with the corresponding means of one or more places at the nearest available stations whose normals have been already determined, and thereafter applying the necessary correction. Thus the normals which have been arrived at in this very laborious manner are substantially the averages which would have been obtained if the observations at each of the stations had been made during precisely the same terms of years. The thirty years' averages should probably have been accepted as the best normals for Stykkisholm in Iceland, instead of correcting these averages from the Greenwich and Christiania observations, seeing that a low average barometer at Stykkisholm is frequently coincident with a high barometer at either or both of these stations, and *vice versa*. The resulting differences, however, are but slight. This work of Dr. Buys Ballot, particularly when looked at with reference to future discussions, may be said to take a place at once as a classic of meteorology. The next step to be taken in this field of European meteorology is the discussion of all good barometric observations made in Europe during the meteorological lustrum ending with 1875. To the results of this discussion corrections could be applied from Du Buys Ballot's normals, which are sufficiently numerous for the purpose, and thus a graphic representation could be made of the closest possible approximation to the true mean atmospheric pressure of Europe. In this way, by disclosing the striking, and in a large measure still unrecognised, influence of large masses of land and water on the barometric pressure, much light would be thrown on the origin and history of those great atmospheric currents which, flowing or sweeping over this continent, are mainly instrumental in determining the climates of its different regions.

METEOROLOGY OF NEW YORK, U.S.—The "Annual Report of the New York Meteorological Observatory for 1876" gives, in addition to the individual observations made daily, and their monthly and annual averages, a more than usually full statement of rain and wind observations. On pp. 39-88 are given the details of the amount of rain and snow-water which fell each hour from 1870 to 1876, together with the hourly averages of each month for these seven years. These hourly means show maximum amounts during winter, from 11 A.M. to 3 P.M.; during spring, from 9 P.M. to 1 A.M.; during summer, from 5 to 10 P.M.; and during autumn, from 3 to 8 A.M. The irregularity of these periods and the irregular occurrence of secondary maxima indicate that seven years is too short a time for the determination of the hourly curve of the rainfall at New York. There appears, however, a tendency to a double maximum varying considerably with season. Extended observation alone can give this curve. The influence of the daily fluctuation of temperature and of the sea breeze which sets in very decidedly from south-east during the hot months on the rain-curve, can then be studied. During the same seven years the duration of each shower has been noted in the number of minutes, the average result of which is that the minimum time of fall, a small fraction less than two days, occurred in June; from this time it slowly but steadily rose to 3 days

17 hours in January, fell a little in February, and rose to $4\frac{1}{2}$ days, the annual maximum in March, from which it rapidly declined to the minimum in June. On a mean of the past forty-one years the monthly averages are in excess from May to August inclusive, August and May being decidedly the months of maximum rainfall, whilst January and February are the months of least rainfall. From 1836 the annual amounts show with some interruptions a decided increase in the rainfall up to 1868, since which year there has been as decided a decrease. This result is generally corroborated by the rainfall at Washington, Philadelphia, and Providence, which Mr. Draper adds to his Report. A valuable table of the monthly amounts from 1836 to 1876 is printed at p. 6. In accordance with the suggestion thrown out by Mr. Hill (*NATURE*, vol. xvi. p. 505) the amounts for the winter months have been picked out, averaged for the eleven-years sun-spot period, and bloxamed. The results, thus worked out, are in inches these, beginning with the first year of the cycle:—22'57, 22'26, 22'92, 23'31, 22'24, 21'03, 21'98, 21'05, 21'14, 22'18, and 23'56.

METEOROLOGY IN RUSSIA.—The St. Petersburg Agromonomical Society has appointed a special committee for the purpose of elaborating, in accord with other Russian scientific bodies, a scheme for establishing throughout Russia an extensive network of meteorological stations. Owing to the interest manifested in the subject by a great number of agriculturists, it is expected that the plan will soon be put into execution.

NOTES

WE much regret to have to announce the death, on Sunday last, of Mr. Robert Swinhoe, F.R.S., a naturalist whose numerous contributions to our knowledge of the mammalia and birds of the Chinese Empire have proved invaluable to zoological science. We hope, next week, to give an account of Mr. Swinhoe's work.

THE International Committee for the erection of a monument to Liebig at Munich, having now at their disposal a sum of 120,000 marks, invite sculptors of all nations to send in models for their acceptance. A prize of 2,000 marks will be given to the model which takes the first place, and 1,500 to the second. The model of the statue should be forty centimetres, and of statue and pedestal about one metre in height. Models should be addressed to the "Castellan der königlichen Akademie der Künste, 38, Unter den Linden, Berlin," where they will be received from June 1 to 15, 1878, to be exhibited first at Berlin and then at Munich. The Committee bear all the expenses of transport.

It has been noted in the French papers *à propos* of the recent colliery explosion, that M. Leverrier, when presiding at the meeting of the French learned societies at Easter, proposed to extend the telegraphic warnings of the International Meteorological System to the several French pits. The question of the illumination of mines by electricity has been revived by these terrible tragedies, and a number of interesting communications connected with that important topic will be presented and fully discussed at the next meeting of the French Academy of Sciences.

It was stated by one of the speakers at the last quarterly meeting of the French Academies that M. Thiers had written a complete work on Spherical Trigonometry when quite a young man.

WE regret to record the death of M. Cazin, Professor of Physics at one of the Paris Lycées, and an active member of the Paris Physical Society. M. Cazin was sent to the Island of St. Paul by the Academy of Sciences under the command of Capt. Mouchez to make physical observations during the last transit of

Venus; he there contracted the germ of the illness which has proved fatal at the early age of forty years. He had been admitted to the Observatory by M. Leverrier to execute a series of delicate researches on magnetism, which have been left unfinished.

THE Harveian Oration at the Royal College of Physicians of London will be delivered in 1878 by Dr. J. Burdon Sanderson, F.R.S.

AN anthropological exhibition will be opened at Moscow in 1879, in connection with the society of Friends of Natural Science. Many objects of great scientific value, almost exclusively of Russian origin, are already in the hands of the organising committee.

MR. TUCKWELL, recently head-master of Taunton College School, has issued a circular addressed to head-masters, giving an account of his connection with the school whose reputation he did so much to raise, and which has treated him so ungratefully. Our readers are already familiar with the details of this unhappy matter, and we are sure will all wish with us that Mr. Tuckwell may soon find a field for the exercise of his powers as a successful teacher unfettered by the narrowness of uneducated and narrow-minded directors. Mr. Tuckwell gave Taunton School a status and a name; the Council of the school have undone all his work, and left the school nowhere.

THE winter session of the Chester Society of Natural Science opened on October 25 with a lecture on "The Arctic Regions," by Mr. de Rance, of H.M. Geological Survey. The upper silurian, lower carboniferous sandstones, mountain limestone, and lias of the Parry Archipelago, as well as the oolites, cretaceous and miocene rocks of Greenland and Grinnel Land, were described as occupying hollows in the old Laurentian Mountains, and the existing cold climate was stated to have probably only prevailed since the last glacial epoch. The range of the northern mammals, and the discovery of remains of the Eskimo by Capt. Feilden, R.N., naturalist of the *Alert*, near Cape Beechey, far north of the present limit of human habitation, and further north than any previous discovery of man or his works, were commented on; and a large collection of Arctic fossils were exhibited by Sir Phillip Egerton, collected in Grinnel Land by his nephew, Lieut. Egerton, R.N., of the late British Arctic Expedition.

AN unusually interesting scientific *soirée* was recently held at the Bristol Museum and Library, which has been characterised as "the headquarters of scientific research in the west of England." Many of the most recent scientific experiments were shown, the most attractive probably being Prof. Graham Bell's exhibition of the wonders of the telephone. During the winter a course of lectures has been arranged for at the museum, mostly scientific, as follows:—November 19—A. R. Wallace, F.R.G.S., F.L.S., the Distribution of Animals as indicating Geographical Changes; November 29—Prof. Ball, F.R.S., a Night at Lord Rosse's Telescope, illustrated by the Oxy-hydrogen Lantern. December 10—Frederick Wedmore, Rembrandt; his Life and Work. January 14—Prof. Marshall, M.A., Principal of University College, Bristol, The Economic Condition of America. January 28—Prof. W. C. Williamson, F.R.S., Coal and Coal Plants. February 11—C. T. Hudson, M.A., LL.D., The Larger and Rarer Rotifers; illustrated with Transparent Diagrams. February 26—Prof. Rowley, M.A., of University College, Bristol, Francis Bacon: his Personal Character and Political Career. March 11—Dr. J. H. Gladstone, F.R.S., Fiery Meteors and Meteoric Stones. March 25—J. Norman Lockyer, F.R.S., Sun Spots in Relation to Indian Famines, with Spectroscopic Experiments and Oxy-hydrogen Lantern Illustrations.